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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte PATRICK J. LINK

Appeal 2009-009533
Application 10/690,818¹
Technology Center 3700

Before LANCE LEONARD BARRY, JEAN R. HOMERE, and MICHAEL R. ZECHER, *Administrative Patent Judges*.

ZECHER, *Administrative Patent Judge*.

DECISION ON APPEAL

¹ Filed on October 23, 2003. This application is a divisional of application 09/723,322, filed on November 28, 2000. The real party in interest is Nintendo Co., Ltd. (App. Br. 3.)

I. STATEMENT OF THE CASE

Appellant appeals under 35 U.S.C. § 134(a) (2002) from the Examiner's final rejection of claims 6, 14, and 17 through 58. (App. Br. 5.)² Claims 1-5, 7-13, 15, and 16 have been cancelled. (*Id.*) We have jurisdiction under 35 U.S.C. § 6(b) (2008).

We affirm-in-part.

Appellant's Invention

Appellant invented a method, apparatus, and storage device for running software applications, such as video games, on platforms other than the platforms the software was intended or designed to run on. (Spec. 1, ¶ [0002].)

Illustrative Claim

Independent claim 6 further illustrates the invention as follows:

6. A method of emulating a handheld video game device of the type that includes a handheld housing having an electronic display thereon, said handheld housing having therein a processor that runs a video game software image out of a page-based read only memory (ROM) to present interactive displays on said electronic display of animated video game play in response to user inputs, the method comprising:

executing a video game device emulator program on a target computing device different from said handheld video game device including said handheld housing having said electronic display thereon, said target computing device being capable of displaying graphical information on a target computing device display, said target computing device having read/write memory and receiving user inputs, said executing video game device emulator program controlling said target

² All references to the Appeal Brief are to the Appeal Brief filed October 16, 2008, which replaced the Appeal Brief filed September 2, 2008.

computing device to at least in part emulate said handheld video game device so as to at least in part enable said target computing device to run said video game software and present interactive displays of said animated video game play on said target computing device display in response to user inputs to said target computing platform;

modeling at least some display timing activities of said handheld video game device electronic display on said target computing device;

processing, with said emulator program executing on said target computing device, said video game software image capable of being executed on said handheld video game device processor within said handheld housing that runs video game software to present interactive displays on said electronic display of animated video game play in response to user inputs; and

generating a real time interactive video game presentation on said target computing device display at least in part in response to said processed video game software image and said modeled display timing activities,

wherein said video game software image comprises multiple ROM pages and said method further includes said emulator program providing a pointer table system that allocates emulated ROM pages in said target computing device read/write memory and duplicates at least a portion of said allocated emulated ROM pages across said ROM pages to facilitate page selection and reduce page swapping.

Prior Art Relied Upon

The Examiner relies on the following prior art as evidence of unpatentability:

Hannah	US 4,771,279	Sep. 13, 1988
Mackey	US 5,153,577	Oct. 6, 1992

Morley	US 5,781,758	July 14, 1998
Traut	US 5,790,825	Aug. 4, 1998
Farber	US 5,903,760	May 11, 1999
Dahl	US 5,949,985	Sep. 7, 1999
Nishiumi	US 6,007,428	Dec. 28, 1999
Reed	US 6,058,288	May 2, 2000
Munshi	US 6,084,600	Jul. 4, 2000
Mullarkey	US 6,192,446 B1	Feb. 20, 2001 (filed Sep. 3, 1998)
Sterchi	US 2003/0207712 A1	Nov. 6, 2003 (filed Dec. 14, 2000)
Duruöz	US 6,658,056 B1	Dec. 2, 2003 (filed Mar. 30, 1999)

“*Snes9x: The Portable Super Nintendo Entertainment System Emulator*,” (June 1999), available at <http://www.snes9x.com> (hereinafter “Snes9x”).

Adam Planski, “*GameBoy 98 Homepage*,” (Dec. 1999), <http://gb98.pocketheaven.com/> (hereinafter “GameBoy 98”).

Gunter Woigk, “*z80-68k-v150 Z80 Engine written in 68020 assembler for inclusion in C/C++ projects*,” (Dec. 1999), http://little-bat.de/prog/download/z80_68k/z80_68k.html (hereinafter “Woigk”).

Rejections on Appeal

The Examiner rejects the claims on appeal as follows:

Claims 6, 14, 18, 23, 27, 29, 32, and 35-58 stand rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Snes9x, Dahl, and GameBoy 98.

Claim 17 stands rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Snes9x, Dahl, GameBoy 98, and Nishiumi.

Claim 19 stands rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Snes9x, Dahl, GameBoy 98, and Munshi.

Claim 20 stands rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Snes9x, Dahl, GameBoy 98, and Mackey.

Claim 21 stands rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Snes9x, Dahl, GameBoy 98, and Sterchi.

Claim 22 stands rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Snes9x, Dahl, GameBoy 98, and Morley.

Claim 24 stands rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Snes9x, Dahl, GameBoy 98, and Woigk.

Claims 25 and 26 stand rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Snes9x, Dahl, GameBoy 98, and Hannah.

Claim 28 stands rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Snes9x, Dahl, GameBoy 98, and Mullarkey.

Claim 30 stands rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Snes9x, Dahl, GameBoy 98, and Farber.

Claim 31 stands rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Snes9x, Dahl, GameBoy 98, and Traut.

Claim 33 stands rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Snes9x, Dahl, GameBoy 98, Munshi, and Duruöz.

Claim 34 stands rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Snes9x, Dahl, GameBoy 98, and Reed.

Appellant's Contentions

Appellant contends that Dahl's disclosure of L1 caching of instructions is a conventional cache memory technique and, therefore, Dahl does not teach or fairly suggest "duplicat[ing] at least a portion of [the] allocated emulated ROM pages across [the] ROM pages," as recited in independent claim 6. (App. Br. 21-23.) Further, Appellant argues that since Dahl discloses directly reading program instructions from the emulated direct access storage device (hereinafter "DASD"), there is no need to copy pages of the program instructions in the emulated main store. (Reply Br. 2-4.) Therefore, Appellant alleges that since Dahl discloses avoiding duplication by directly accessing a single copy of information stored in the DASD, Dahl teaches away from the claimed invention. (*Id.*)

Examiner's Findings and Conclusions

The Examiner finds that Dahl discloses reducing both page swapping and address translation overhead during emulation by copying and storing all portions of a system's memory, including both fixed and paged sections of memory space, into the active memory of an emulated system. (Ans. 22-23.) Further, the Examiner finds that it would have been obvious to an

ordinarily skilled artisan to copy both the fixed and page sections of read-only memory (hereinafter “ROM”) in order to preserve the expected layout of the memory space within the emulated system. (*Id.*) Thus, the Examiner finds that Dahl teaches the disputed limitation. (*Id.*)

II. ISSUE

Has Appellant shown that the Examiner erred in concluding that the combination of Snes9x, Dahl, and GameBoy 98 renders independent claim 6 unpatentable? In particular, the issue turns on whether:

- (a) the proffered combination teaches or fairly suggests “duplicat[ing] at least a portion of [the] allocated emulated ROM pages across [the] ROM pages,” as recited in independent claim 6; and
- (b) Dahl teaches away from the claimed invention.

III. FINDINGS OF FACT

The following Findings of Fact (hereinafter “FF”) are shown by a preponderance of the evidence.

Dahl

FF 1. Dahl’s figure 2 depicts a block diagram of server (12), which comprises a computer. (Col. 3, ll. 60-62.) In particular, Dahl discloses that in order to emulate a program (46), emulator (38) accesses instructions within the program (46) directly out of the simulated DASD (39) and does not page the program instructions into simulated main store (37). (Col. 4, ll. 45-50.)

FF 2. Dahl’s figure 3 depicts a block diagram of the processor complex (50). (Col. 5, ll. 1-2.) In particular, Dahl discloses an address

translation table that indicates the pages numbers and associated physical addresses of each storage object. (*Id.* at ll. 26-29.)

FF 3. In order to minimize both address translation and paging overhead during emulation, Dahl discloses simulating both the main store (58) and DASD (60) as segments within the address space of system (12). (*Id.* at ll. 47-50.) Dahl discloses identically accessing both the main store (58) and DASD (60), thereby enabling the emulator (38) to avoid paging portions of the program (46) between the simulated DASD (39) and the simulated main store (37) when fetching emulated instructions. (*Id.* at ll. 50-54.) Moreover, since Dahl discloses storing all program objects within the simulated DASD (39), the address translation overhead is eliminated when fetching emulated instructions with program (46). (*Id.* at ll. 54-58.)

Mullarkey

FF 4. Mullarkey's figure 2 depicts a block diagram of a memory device (30) in a computer system. (Col. 2, ll. 13-14.) In particular, Mullarkey discloses utilizing a look-ahead circuit (205) to proactively control the memory device (30). (Col. 7, ll. 8-10.) Mullarkey discloses that the look-ahead circuit evaluates three subsequent instructions in order to determine where power and speed can be gained. (*Id.* at ll. 10-12.)

IV. ANALYSIS

35 U.S.C. § 103(a) Rejection—Combination of Snes9x, Dahl, and GameBoy 98

Claim 6

Independent claim 6 recites, *inter alia*, “duplicat[ing] at least a portion of [the] allocated emulated ROM pages across [the] ROM pages.”

As detailed in the Findings of Fact section above, Dahl discloses an emulator that emulates a software program by accessing or fetching instructions within the software program directly out of a simulated DASD. (FFs 1 & 2). Dahl discloses that the emulator accesses or fetches these instructions without paging such instructions into a simulated main store. (*Id.*) According to Dahl, the disclosed method of emulating a software program reduces both address translation and paging overhead. (FF 2.)

We find that Dahl's disclosure teaches allocating emulated pages of a software program into a simulated DASD. Further, "if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill." *KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. 398, 417 (2007). In this case, since only routine skill in the art would be required to duplicate the emulated pages of a software program, we find that an ordinarily skilled artisan would have readily appreciated allocating Dahl's emulated pages of a software program into the simulated DASD, and duplicating such pages across the memory (i.e., ROM pages) of the simulated DASD. Thus, we find that Dahl teaches or fairly suggests the disputed limitation.

Teaching Away

We are not persuaded by Appellant's argument that Dahl teaches away from the claimed invention because Dahl discloses avoiding duplication by directly accessing a single copy of information stored in the simulated DASD. (Reply Br. 2-4.) "What the prior art teaches and whether it teaches toward or away from the claimed invention ... is a determination of fact." *Para-Ordnance Mfg., Inc. v. SGS Importers Int'l, Inc.*, 73 F.3d

1085, 1088 (Fed. Cir. 1995). “A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant.” *In re Gurley*, 27 F.3d 551, 553 (Fed. Cir. 1994). Teaching an alternative or equivalent method, however, does not teach away from the use of a claimed method. *In re Dunn*, 349 F.2d 433, 438 (CCPA 1965).

Appellant’s reference to Dahl’s disclosure of avoiding duplication by directly accessing a single copy of information stored in the simulated DASD does not indicate that Dahl’s simulated DASD is incapable of duplicating the information (i.e., emulated pages of a software program) stored therein. While Appellant points out that Dahl discloses that the emulated pages are not paged or duplicated into the simulated main store (Reply Br. 3-4), this disclosure in no way discourages or precludes duplicating the information (i.e., emulated pages of the software program) stored in the simulated DASD. Further, Appellant has not pointed to an explicit disclosure within Dahl that acts to “criticize, discredit, or otherwise discourage” duplicating at least a portion of the allocated ROM pages across the ROM pages of a target computing device’s read/write memory. *In re Fulton*, 391 F.3d 1195, 1201 (Fed. Cir. 2004). Instead, we find that Dahl’s disclosure of duplicating the emulated pages of a software program across the memory (i.e., ROM pages) of the simulated DASD is an alternative or equivalent teaching to “duplicat[ing] at least a portion of [the] allocated emulated ROM pages across [the] ROM pages,” as claimed. Therefore, Appellant has not shown that the Dahl’s disclosure teaches away from the claimed invention. It follows that Appellant has not shown that the

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Examiner erred in concluding that the combination of Snes9x, Dahl, and GameBoy 98 renders independent claim 6 unpatentable.

Claims 14, 17, 18, 20-22, 24-27, 30-37, 40, 47, and 54

Appellant does not provide separate and distinct arguments for patentability with respect to independent claims 14 and 37, and dependent claims 17, 18, 20-22, 24-27, 30-36, 40, 47, and 54. Therefore, we select independent claim 6 as representative of the cited claims. Consequently, Appellant has not shown error in the Examiner's rejection of independent claims 14 and 37, and dependent claims 17, 18, 20-22, 24-27, 30-36, 40, 47, and 54, for the reasons set forth in our discussion of independent claim 6.

See 37 C.F.R. § 41.37(c)(1)(vii).

Claims 38, 39, 41-46, 48-53, and 55-58

Appellant merely reiterates what the disputed claim limitations recite and makes general allegations as to the teachings of the prior art references. (App. Br. 25-28.) Such reiterations and general allegations do not amount to separate patentability arguments. *See Ex parte Belinne*, No. 2009-004693, 2009 WL 2477843 at *3-4 (BPAI Aug. 10, 2009) (informative); *see also* 37 C.F.R. § 41.37(c)(1)(vii). Appellant's arguments "do not ... explain why the Examiner's explicit fact finding is in error." *Belinne*, 2009 WL 2477843 at *4. Therefore, Appellant's arguments are not persuasive. It follows that Appellant has not shown that the Examiner erred in concluding that the combination of Snes9x, Dahl, and GameBoy 98 renders dependent claims 38, 39, 41-46, 48-53, and 55-58 unpatentable.

Claim 23

Appellant contends that Dahl's disclosure of an address translation table that exists in typical paging architectures does not teach or fairly

suggest “using said pointer table system to control memory access by remapping memory access instructions into *function calls*,” (emphasis added) as recited in dependent claim 23. (App. Br. 24; Reply Br. 6-7.) We agree.

As detailed in the Findings of Fact section above, Dahl discloses utilizing an address translation table that indicates the pages numbers and associated physical addresses of each storage object. (FF 2.) At best, we find that Dahl’s disclosure teaches utilizing an address translation table that translates memory addresses when emulating a software program. However, we agree with Appellant that Dahl does not teach or fairly suggest utilizing a pointer table system to control memory access by remapping memory access instructions into function calls. (Reply Br. 7.) While Dahl’s address translation table is capable of translating memory addresses when emulating a software program, Dahl fails to teach or fairly suggest that the address translation table remaps memory access instructions into function calls. Therefore, we find that the Examiner improperly relied upon Dahl to teach or fairly suggest the disputed limitation. Further, we find that neither Snes9x nor GameBoy 98 remedy the deficiencies in the Examiner’s rejection. It follows that Appellant has shown that the Examiner erred in concluding that the combination of Snes9x, Dahl, and GameBoy 98 renders dependent claim 23 unpatentable.

Claim 29

Appellant contends that the Examiner fails to cite to any factual evidence that teaches or fairly suggests “modeling each handheld video game device native instruction register as a union of byte, word and long

register formats,” as recited in dependent claim 29. (App. Br. 25.) We do not agree.

We begin our analysis by noting that the Examiner establishes a *prima facie* case that the combination of Snes9x, Dahl, and Gameboy 98 renders dependent claim 29 unpatentable. (Ans. 8) In particular, the Examiner states that a union is an old and well known computing data structure that allows for the storage of a value that could take on several different, but fixed types of data. (*Id.* at 24-25.) Additionally, the Examiner states that it would have been obvious to an ordinarily skilled artisan to incorporate a union into any type of system, including Dahl’s emulator system, in order to access data without requiring costly duplication of code to accommodate all types of systems, or additional overhead through increased translation of data types. (*Id.*) In response, Appellant makes a blanket statement that the Examiner has cited no factual evidence in support of a hindsight conclusion that dependent claim 29 would have been obvious. (App. Br. 25.) Moreover, Appellant cites to where the present Specification supports the claimed subject matter and generally alleges that the Examiner ignores or overlooks the claimed term “union.” (*Id.*)

Since Appellant has not made a bona fide effort to explain why the Examiner’s explicit fact finding is in error, we find that the weight of the evidence favors the Examiner’s position. Therefore, we find that Appellant has not shown reversible error in the Examiner’s obviousness rejection of

dependent claim 29.³ It follows that Appellant has not shown that the Examiner erred in concluding that the combination of Snes9x, Dahl, and GameBoy 98 renders dependent claim 29 unpatentable.

Claims 40, 47, and 54

Appellant contends that Dahl’s disclosure of only one System 36 instruction set does not teach or fairly suggest “emulat[ing] each of said ROM banks with a different RAM page,” as recited in dependent claims 40, 47, and 54. (App. Br. 26-27.) We do not agree.

As set forth above, we find Dahl’s disclosure teaches allocating emulated pages of a software program into a simulated DASD. In particular, we find that an ordinarily skilled artisan would have appreciated that Dahl’s pages of a software program are capable of being stored in various types of memory, including both ROM banks and random access memory (hereinafter “RAM”) pages. Accordingly, during emulation, we find that an ordinarily skilled artisan would have appreciated allocating the data from the ROM banks (i.e., Dahl’s pages of a software program) into different RAM pages. Thus, we find that Dahl teaches or fairly suggests the disputed limitation. It follows that Appellant has not shown that the Examiner erred in concluding that the combination of Snes9x, Dahl, and GameBoy 98 renders dependent claims 40, 47, and 54 unpatentable.

³ See *In re Jung*, 98 USPQ2d 1174, 1180 (Fed. Cir. 2011) (“Jung argues that the Board gave improper deference to the examiner’s rejection by requiring Jung to ‘identif[y] a reversible error’ by the examiner, which improperly shifted the burden of proving patentability onto Jung. *Decision* at 11. This is a hollow argument, because, as discussed above, the examiner established a *prima facie* case of anticipation and the burden was properly shifted to Jung to rebut it. . . . ‘[R]everisible error’ means that the applicant must identify to the Board what the examiner did wrong . . .’”).

35 U.S.C. § 103(a) Rejection—Combination of Snes9x, Dahl, GameBoy 98, and Munshi

Claim 19

Appellant merely reiterates what the disputed claim limitation recites and makes a general allegation as to the teachings of Munshi. (App. Br. 28.) This reiteration and general allegation does not amount to a separate patentability argument. *See Ex parte Belinne*, No. 2009-004693, 2009 WL 2477843 at *3-4 (BPAI Aug. 10, 2009) (informative); *see also* 37 C.F.R. § 41.37(c)(1)(vii). Appellant’s argument “do[es] not ... explain why the Examiner’s explicit fact finding is in error.” *Belinne*, 2009 WL 2477843 at *4. Therefore, Appellant’s argument is not persuasive. It follows that Appellant has not shown that the Examiner erred in concluding that the combination of Snes9x, Dahl, GameBoy 98, and Munshi renders dependent claim 19 unpatentable.

35 U.S.C. § 103(a) Rejection—Combination of Snes9x, Dahl, GameBoy 98, and Mullarkey

Claim 28

Appellant contends that Mullarkey’s disclosure of an instruction look-ahead circuit does not teach or fairly suggest “performing no-operation look-ahead to avoid wasting processing time in no-operation loops,” as recited in dependent claim 28. (App. Br. 29.) We do not agree.

As detailed in the Findings of Fact section above, Mullarkey discloses a look-ahead circuit that proactively controls a memory device. (FF 4.) Mullarkey discloses that the look-ahead circuit evaluates instructions in order to determine where power and speed can be gained. (*Id.*) By looking ahead to determine where processing can be gained, we find that an

ordinarily skilled artisan would have understood that Mullarky's look-ahead circuit performs the same function regardless of the type of instruction it evaluates. Accordingly, we find that an ordinarily skilled would have appreciated that Mullarkey's look-ahead circuit is capable of evaluating no-operation loops in order to avoid wasting processing time. Thus, we find that Mullarkey teaches or fairly suggests the disputed limitation. It follows that Appellant has not shown that the Examiner erred in concluding that the combination of Snes9x, Dahl, GameBoy 98, and Mullarkey renders dependent claim 28 unpatentable.

V. CONCLUSION OF LAW

1. Appellant has not shown that the Examiner erred in rejecting claims 6, 14, 17-22, and 24-58 as being unpatentable under 35 U.S.C. § 103(a).
2. Appellant has shown that the Examiner erred in rejecting claim 23 as being unpatentable under 35 U.S.C. § 103(a).

VI. DECISION

1. We affirm the Examiner's decision to reject claims 6, 14, 17-22, and 24-58 as being unpatentable under 35 U.S.C. § 103(a).
2. We reverse the Examiner's decision to reject claim 23 as being unpatentable under 35 U.S.C. § 103(a).

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No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED-IN-PART

ELD